

REMARKS/ARGUMENTS

Claims 1 through 18 and 28 through 46 are pending in the instant patent application. Claims 1, 28, and 46 are the three (3) independent claims. Claims 2 through 18 depend from Claim 1. Claims 19 through 27 were cancelled from the application. Claims 29 through 45 depend from independent Claim 28.

1. Amendments to the Claims

Claims 1, 28 and 46 have been amended in order to clarify the patentable subject matter. Claims 1, 28 and 46 have been amended to recite, *inter alia*, . . . an electrical transient that occurs during at least one RF energy pulse. This amendment is supported in the specification (see, e.g., para. [0071-0080]). More specifically, the electrical transient may be from a previous pulse (see para. [0071-0074] and para. [84-85]) or the electrical transient may be from the current pulse (see para. [0080-82]).

Claims 5, 6 and 7 have also been amended in order to clarify the patentable subject matter. Claims 5 and 6 are dependant on Claim 1 and for antecedent basis have been modified to recite, *inter alia*, “. . . said at least one characteristic of an electrical transient . . . “

2. Claim Rejections under 35 U.S.C. § 102(b)

In the Final Office Action, Claims 1 through 13, 16 through 18, 28 through 40, and 43 through 46 were rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,836,943 to Miller, III (hereinafter “Miller”). Applicants respectfully submit that the cited reference does not disclose or suggest all of the elements in independent Claims 1, 28 and 46.

In Miller, “The controller 120 regulates the generator circuit 100 in response to the measured tissue complex impedance 11 and the rate of change of impedance to provide improved electrosurgical effects.” (see col. 12, line 59) More specifically, Miller describes two embodiments:

1. In the first embodiment "tissue impedance 11 is measured in between electrosurgical pulses." (see col. 12, line 64-65). "The controller 120 compares the present tissue condition (impedance) with a desired surgical effect and regulates the generator circuit 110 to obtain the desired surgical effect" (see col. 13, lines 8-11).
2. In the second embodiment "tissue impedance is measured periodically or continuously during electrosurgical pulses." (see col. 13, lines 11-12) "The controller 120 then regulates the generator circuit 110 in response to the measured tissue condition to obtain a desired surgical effect." (see col. 13, lines 20-23).

In both embodiments, a measured value is used to control or regulate the generator circuit. Miller's use of the measured value to actively control the RF output is further explained in the specification. "The DC regulator 10 and the amplifier 100 enable the controller 120 to rapidly vary the characteristics of the output signal, including frequency, magnitude, and pulse width in response to the measured tissue complex impedance." (see col. 13, line 25-30).

Miller's use describes a conventional closed-loop control system in which the controller rapidly varies the output signal in response to a measured value. In the first embodiment, the controller 120 compares the present tissue condition with a desired surgical effect and regulates the generator circuit. In the second embodiment, the controller regulates the generator circuit in response to the measured tissue condition.

Applicants respectfully draw the Examiners attention to Claim 1 (as amended), which recites, *inter alia*, a method for electrosurgically sealing tissue comprising applying a first pulse of RF energy to the tissue and applying at least one subsequent RF energy pulse to the tissue and keeping constant or varying RF energy parameters of individual pulses of subsequent RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during at least one RF energy pulse.

Applicants submit that “keeping constant or varying RF energy parameters . . . in accordance with at least one characteristic of an electrical transient” is not a conventional closed-loop system as used by Miller. An “electrical transient”, as defined by the present specification, includes “a current transient “A”” (see para. [0077]), and “the rate of change of an electrical characteristic (for example current, voltage, impedance, etc.) of the transient “A” . . .”. (see para. [0078]). As illustrated in FIG. 7B and 8, the transient “A” is the waveform, not a single value or measurement.

A “characteristic of an electrical transient” is therefore not a single value or measurement. In addition, a “characteristic of an electrical transient” is not used as feedback to a control loop nor is a “characteristic of an electrical transient” used to rapidly vary the characteristics of the output signal. Instead, the “characteristic of an electrical transient” is “employed to determine the changes to, or the values of, the parameters of the pulse duty cycle (“Dwell Time”) and to change the pulse voltage, as well as other parameters”. (see para [0077]).

Unlike the conventional closed loop control system used in Miller, the RF pulse waveform in the present disclosure is known before the application of the pulse. While Miller rapidly varies the characteristics of the output signal based on a measured value, the characteristics of the RF pulses in the present application are defined by the look-up table and modified based on “at least one characteristic of an electrical transient” of an RF pulse.

Therefore, it is believed that Claim 1 is patentably distinct over the teachings of Miller. Accordingly, withdrawal of the rejection with respect to Claim 1 under 35 U.S.C. §102(b) as anticipated by Miller and allowance thereof are respectfully requested.

Claims 5, 6 and 7 have now been amended to clarify the claim language. As discussed hereinabove, the present application does not use a single measured value of impedance as feedback but instead uses “at least one characteristic of an electrical

transient.” With respect to tissue impedance, the characteristic may be the rate of change of tissue impedance or the dwell time at a specific impedance level. (see para. [0078-0079]). According, withdrawal of the rejection with respect to these claims is also respectfully requested.

Claims 2 through 13, 16 through 18 depend from independent Claim 1 and are patentable for at least the same reasons as discussed above. Claims 28 and 46 are also patentable for reasons analogous to those argued above for Claim 1. Claims 29 through 40, and 43 through 45 are also patentable as these claims depend from patentable Claim 28. Accordingly, for at least the reasons given above for Claim 1 withdrawal of the rejection with respect to these Claims is respectfully requested.

3. Claim Rejections under 35 U.S.C. § 103(a)

In the Final Office Action, Claims 14, 15, 41, and 42 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Miller in view of United States Patent No. 5,558,671 to Yates, et al. (hereinafter “Yates”).

Applicants respectfully traverse this rejection on the grounds that Miller, Yates, and the combination thereof do not disclose or suggest all of the limitations of the rejected claims. Claims 14 and 15 depend from Claim 1, and Claims 41 and 42 depend from Claim 28.

As discussed previously, with respect to rejection of Claims 1 and 28, Miller simply fails to disclose or suggest a method for electrosurgically sealing tissue which keeps constant or varies RF energy parameters of subsequent individual RF energy pulses in accordance with at least one characteristic of an electrical transient that occurs during at least one RF energy pulse, as recited by Applicants’ Claims 1 and 28.

Like Miller, Yates uses conventional closed loop control (see col. 9, line 28-62) and therefore Yates does not cure the deficiencies described hereinabove. In addition, Yates also does not cure the deficiencies in Miller regarding the use of a look-up table.

The look-up table in Yates describes a function of the minimum impedance value and is used exclusively for determining this value. (see col. 8, lines 8-23) The look-up table in Yates describes a single value.

Applicants submit the function and use of the look-up table in Yates is vastly different than the function and use of the look-up table in the present disclosure. The look-up table in the present disclosure contains a plurality of entries that describe the characteristics of the energy pulse. (see FIG. 6B, para. [0071-0074]) "The values read from the seal parameter LUT 80 comprise the power, the maximum voltage, starting voltage, minimum voltage, voltage decay, voltage ramp, maximum RF on time, maximum cool scale factor, pulse minimum, pulse dwell time, pulse off time, current and the desired pulse width." (See para. [0074]).

Applicants submit that Yates does not sufficiently teach the use of a look-up table to cure the deficiencies in Miller, thus, Claims 14, 15, 41 and 42 are patentable for the reasons discussed above. Accordingly, for at least the reasons given above withdrawal of the rejection with respect to Claims 14, 15, 41 and 42 under 35 U.S.C. §103(a) over Miller, in view of Yates and allowance thereof are respectfully requested.

4. Rejection of Claims 1 through 18, and 28 through 45 Under Doctrine of Obviousness-type Double Patenting

Claims 1 through 18, and 28 through 45 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 23 through 52 of U.S. Patent No. 6,398,779, which is commonly owned. A terminal disclaimer is filed concurrently with this response. The terminal disclaimer is proper to traverse the rejection since the present application and U.S. Patent Nos. 6,398,779 are commonly owned.

CONCLUSION


In view of the foregoing amendments and remarks, reconsideration of the application and allowance of all pending claims is earnestly solicited.

Should the Examiner believe that a telephone interview may facilitate prosecution of this application, the Examiner is respectfully requested to telephone Applicant's undersigned representative at the number indicated below.

Please charge the statutory disclaimer fee of \$130.00 to Deposit Account No. 21-0550. In addition, please charge any deficiency as well as any other fee(s) that may become due under 37 C.F.R. § 1.16 and/or 1.17 at any time during the pendency of this application, or credit any overpayment of such fee(s), to Deposit Account No. 21-0550.

TWO (2) COPIES OF THIS SHEET ARE ENCLOSED

Respectfully submitted.



Thomas A. Beaton
Reg. No. 46,543
Attorney for Applicants

Date: Aug. 24, 06

UNITED STATES SURGICAL

A DIVISION OF TYCO HEALTHCARE GROUP LP
195 McDermott Road
North Haven, CT 06473
(303) 581-6831